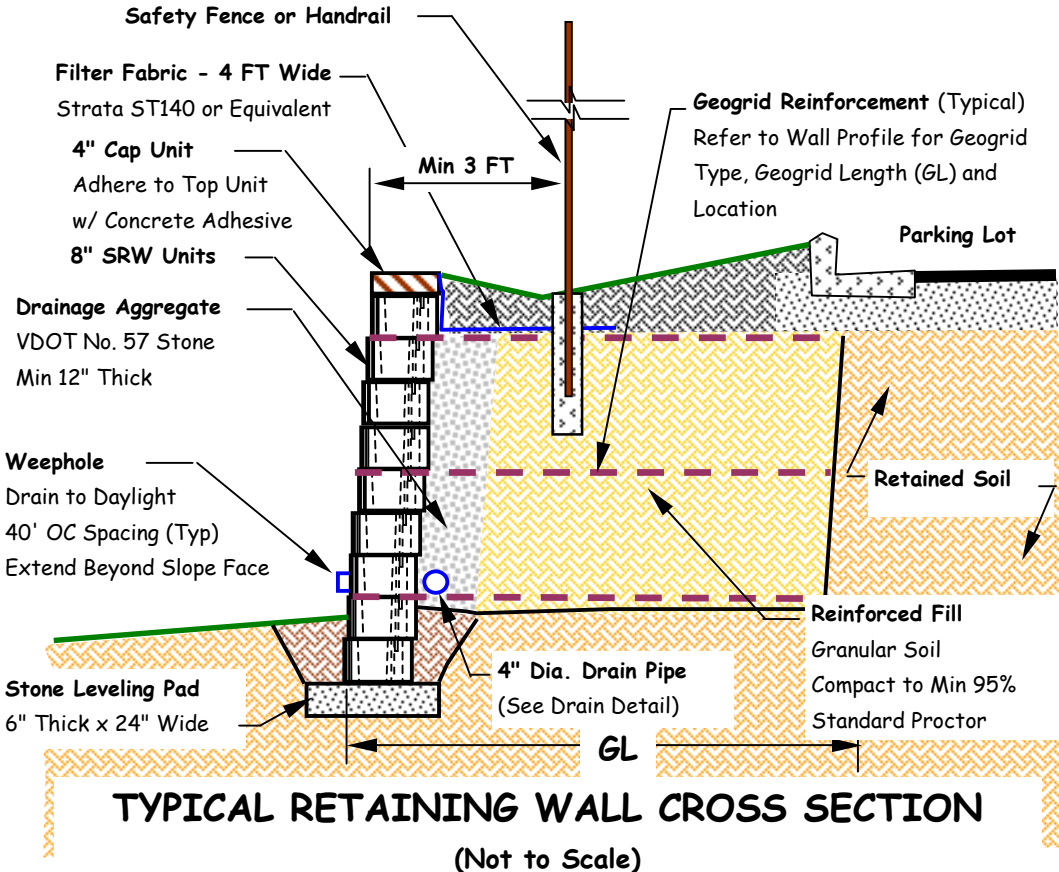
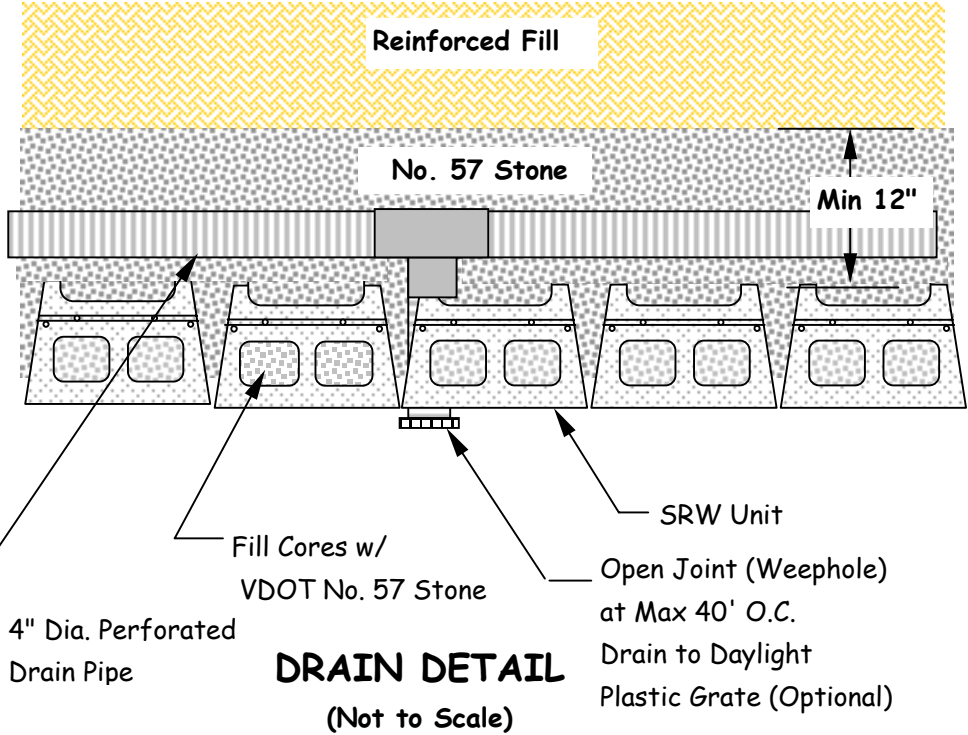


Engineer's Quantity Estimate *

Wall Face Area/ Excluding Cap Units	3,281	sf
Wall Length/ Caps	465	ft
StrataGrid SG200 or Equivalent	1,200	sy
Reinforced Fill - Granular Backfill Volume	695	cyds
Drainage Aggregate - No. 57 Stone	258	tons
Crusher Run - 6" Thick Leveling Pad	31	tons
Strata ST140 - Non-Woven Filter Fabric	207	sy
Sleeve-It Fence Post System - 8 Ft O.C.	60	ea

* Quantity estimate is based on grading plan and wall design parameters.

Wall installer shall verify quantities prior to submitting bid



DRAWING INDEX	
Sheet No.	
1	Site Plan
2	General Notes/ Design Parameters
3	Details - SRW Units
4 - 5	Wall A - Sta. 0 to Sta. 465

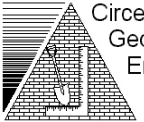
Segmental Retaining Wall

South Ridge Street and Loyal Street

City of Danville, Virginia

Site Plan Adapted From The Retaining Wall Plan,
Prepared by The City of Danville, Office of the City Engineer.
Site Plan For Illustrative Purposes. Approx. Scale: 1" = 40 FT



South Ridge Street & Loyal Street City of Danville, Virginia			
 Circeo Geotechnical Engineering, P.C.		CIRCEO GEOTECH 5956 Buckland Mill Road Roanoke, Virginia 24019 Phone: (540) 366-2379 Fax: (540) 904-6200	
Scale:	As Shown	Project No.	RW-892
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GENERAL NOTES:

- 1.0 STRIP VEGETATIVE AND ORGANIC SOIL FROM THE WALL AND GEOGRID ALIGNMENT.
- 2.0 BENCH CUT ALL EXCAVATED SLOPES.
- 3.0 DO NOT EXCAVATE BEYOND EXCAVATION LINES SHOWN ON PLAN UNLESS DIRECTED BY THE GEOTECHNICAL ENGINEER TO REMOVE UNSUITABLE SOIL.
- 4.0 CONTRACTOR SHALL ENSURE TEMPORARY EXCAVATIONS ARE STABLE AND PROVIDE EXCAVATION SUPPORT IF NEEDED.
- 5.0 GEOTECHNICAL ENGINEER SHALL VERIFY FOUNDATION SOILS AS BEING COMPETENT PER THE DESIGN PARAMETERS.
- 6.0 LEVELING PAD SHALL CONSIST OF COMPACTED SAND, GRAVEL, OR COMBINATION AND SHALL BE A MINIMUM 6-INCH THICK LAYER WITH A MINIMUM WIDTH OF 24 INCHES. AS AN ALTERNATIVE, A MINIMUM 3-INCH THICK LAYER OF LEAN CONCRETE (FLOWABLE FILL) WITH A 28-DAY COMPRESSIVE STRENGTH OF 200-300 PSI MAY BE USED AS A LEVELING PAD.
- 7.0 A 4-INCH-DIAMETER SLOTTED DRAINAGE PIPE SHALL BE INSTALLED BEHIND THE WALL AND CONNECT TO WEEPHOLES INSTALLED AT THE BASE OF THE WALL (40 FEET ON CENTER) AND EXTEND BEYOND THE FINAL GRADE TO DAYLIGHT (SEE DRAIN DETAIL).
- 8.0 DRAINAGE AGGREGATE AND UNIT (CORE) FILL SHALL CONSIST OF CLEAN ANGULAR GRAVEL (**VDOT NO. 57 STONE**), MEETING THE FOLLOWING GRADATION AS DETERMINED IN ACCORDANCE WITH ASTM D-422.

SIEVE SIZE	PERCENTAGE PASSING
1-1/2 INCH	100
1 INCH	95-100
1/2 INCH	25 - 60
NO. 4	0-10
NO. 200	0-5

- 9.0 GEOGRIDS SHALL BE LAID HORIZONTALLY ON COMPACTED BACKFILL FOR THE REQUIRED GEOGRID LENGTH (GL) IN THE **TENSILE STRENGTH DIRECTION (PERPENDICULAR TO WALL FACE)** NOTED ON THE WALL PROFILE. THE GEOGRID SHALL BE PLACED WITHIN **ONE INCH** OF THE FRONT FACE OF THE UNIT BELOW AND EXTEND HORIZONTALLY OVER COMPACTED FILL.
- 10.0 PRE-APPROVED SEGMENTAL RETAINING WALL (SRW) SYSTEMS:

ALLAN BLOCK AB CLASSIC - PRODUCED BY BLUESTONE BLOCK

ANCHOR DIAMOND PRO - PRODUCED BY ALLIED CONCRETE

CORNERSTONE 100 - PRODUCED BY BOXLEY BLOCK

EVERLOC 810T - PRODUCED BY E. DILLON & COMPANY

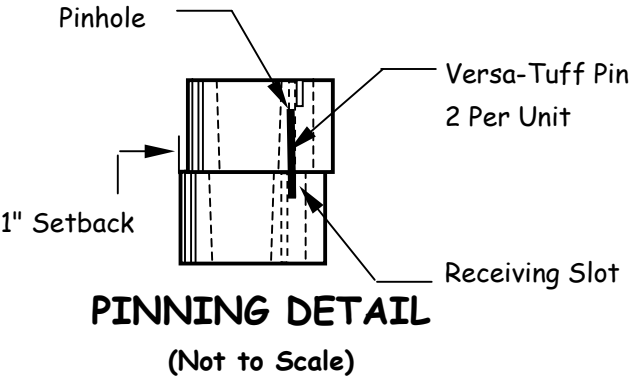
KEYSTONE COMPAC II - PRODUCED BY ADAMS PRODUCTS CO.

ROCKWOOD CLASSIC 8 - PRODUCED BY BOXLEY BLOCK

VERSA-LOK SQUARE FOOT* - PRODUCED BY CHANDLER CONCRETE

** DETAILS SHOWN FOR SRW UNITS PROVIDED FOR ILLUSTRATIVE PURPOSES.*
- 11.0 SEGMENTAL RETAINING WALL (SRW) UNITS MOLDED DIMENSIONS SHALL BE 8 INCHES HIGH BY 18 INCHES LONG BY 12 INCHES DEEP AND SHALL NOT DIFFER MORE THAN ± 1/8 INCH IN ANY DIMENSION.
- 12.0 WALL BATTER MAY VARY FROM 4.5 TO 7.1 DEGREES DEPENDING ON SRW SETBACK. ACTUAL SETBACK PER UNIT SHALL BE CONSISTENT WITH THE REQUIREMENTS OF THE PRE-APPROVED SRW SYSTEM.

- 13.0 FIELD ADJUSTMENTS OF BLOCK ALIGNMENT MAY BE MADE ON NON-REINFORCEMENT LAYERS WITH THE USE OF SHIMS OR ASPHALT SHINGLES TO RAISE ONE COURSE OF BLOCK BY A MAXIMUM OF 1/4 INCH VERTICAL HEIGHT.
- 14.0 REINFORCED FILL SHALL CONSIST OF GRANULAR SOIL FILL WITH USCS SOIL TYPES GP, GW, GM, GC, SW, SP, SM, OR SC WITH A MINIMUM ANGLE OF INTERNAL FRICTION, ϕ' , OF 30 DEGREES AS OUTLINED IN DESIGN PARAMETERS - NOTE 4. LOW PLASTICITY SILT OR CLAY (ML-CL) CAN BE USED SUBJECT TO APPROVAL BY THE GEOTECHNICAL ENGINEER. ROCK FRAGMENTS SHALL BE LIMITED TO 4 INCHES IN DIAMETER OR LESS. THE FINE FRACTION (MINUS NO. 40 SIEVE) SHALL HAVE A MAXIMUM LIQUID LIMIT (LL) OF 40 AND A MAXIMUM PLASTICITY INDEX (PI) OF 20. THE BACKFILL SHALL BE FREE OF DEBRIS AND ORGANIC MATTER. HIGHLY EXPANSIVE SOILS (MH-CH) SHALL NOT BE USED IN THE REINFORCED FILL ZONE.
- 15.0 REINFORCED FILL SHALL BE PLACED IN 8-INCH LIFTS AND COMPACTED TO A MINIMUM OF 95% OF MAXIMUM STANDARD PROCTOR DENSITY (ASTM D-698). COMPACTION TESTS SHALL BE PERFORMED AS THE WALL IS INSTALLED. COMPACTION WITHIN 3 FEET OF THE WALL SHALL BE LIMITED TO HAND-OPERATED EQUIPMENT.
- 16.0 A VIBRATORY PLATE TAMPER SHALL BE USED TO DENSIFY NO. 57 STONE. COMPACTION TESTS CAN BE WAIVED WHERE NO. 57 STONE IS USED AS REINFORCED FILL.
- 17.0 CONTRACTOR SHALL SLOPE SITE GRADES TO DIRECT SURFACE RUNOFF AWAY FROM WALL AT END OF EACH DAY TO AVOID WATER DAMAGING THE WALL WHILE UNDER CONSTRUCTION.
- 18.0 ANY SURFACE DRAINAGE FEATURES, FINISH GRADING, PAVEMENT, OR TURF SHALL BE INSTALLED IMMEDIATELY AFTER THE WALL IS COMPLETED.
- 19.0 IF SITE AND SOIL CONDITIONS, WALL GEOMETRY, OR WALL LOADING ARE DIFFERENT THAN THE DRAWINGS AND THE DESIGN PARAMETERS, THE CONTRACTOR MUST CONTACT THE WALL DESIGN ENGINEER PRIOR TO PROCEEDING WITH THE CONSTRUCTION OF THE WALL.
- 20.0 DETAILS FOR FENCE OR HANDRAIL POSTS AT THE TOP OF THE WALL ARE PROVIDED FOR PLACEMENT OF POSTS (SEE SHEET 3 OF 5).



DESIGN PARAMETERS:

- 1 THE WALL PROFILE IS BASED ON THE RETAINING WALL PLAN, SHEET NO. 2 OF 2, SOUTH RIDGE ROAD AND LOYAL STREET, PREPARED BY THE CITY OF DANVILLE, OFFICE OF THE CITY ENGINEER.
- 2 WALL DETAILS SHOWN ON THIS PLAN ARE FOR SEGMENTAL RETAINING WALL (SRW) UNITS MEETING THE NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA) CRITERIA FOR SRW WALL SYSTEMS.
- 3 ENGINEERING ANALYSIS BASED ON USE OF STRATAGRID SG200 GEOGRIDS. OTHER COMPATIBLE GEOGRIDS MAY BE SUBSTITUTED WITH THE APPROVAL OF THE WALL DESIGN ENGINEER.
- 4 THE DESIGN OF THE SEGMENTAL RETAINING WALL (SRW) ASSUMES THE FOLLOWING PARAMETERS:

SOIL CONDITIONS	SOIL Type	γ_m , Moist	FRICTION	
		UNIT WEIGHT (PCF)	ANGLE Φ , (DEG)	COHESION (PSF)
REINFORCED FILL	Granular Fill	120	30	0
RETAINED SOIL	SM-ML	120	30	0
FOUNDATION SOIL	SM-ML	120	30	100


- 5 SOIL STRENGTH PARAMETERS ARE BASED ON USE OF GRANULAR SOIL IN THE REINFORCED FILL ZONE. GRANULAR SOIL (ON-SITE OR BORROW) CAN BE USED FOR FILL PROVIDED THE SOIL IS PLACED IN 8-INCH LIFTS AND EACH LIFT IS COMPACTED TO A MINIMUM OF 95% OF MAX. STANDARD PROCTOR DENSITY USING PORTABLE COMPACTION EQUIPMENT. DO NOT USE HIGH PLASTICITY CLAY (CH-MH), ROOTS OR TOPSOIL IN REINFORCED ZONE.

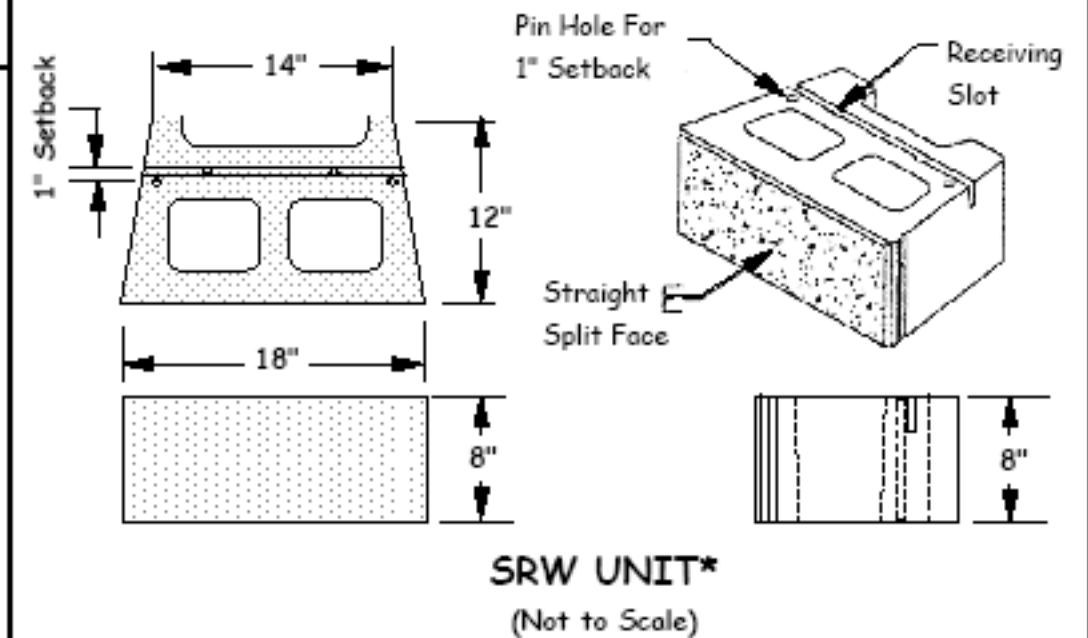
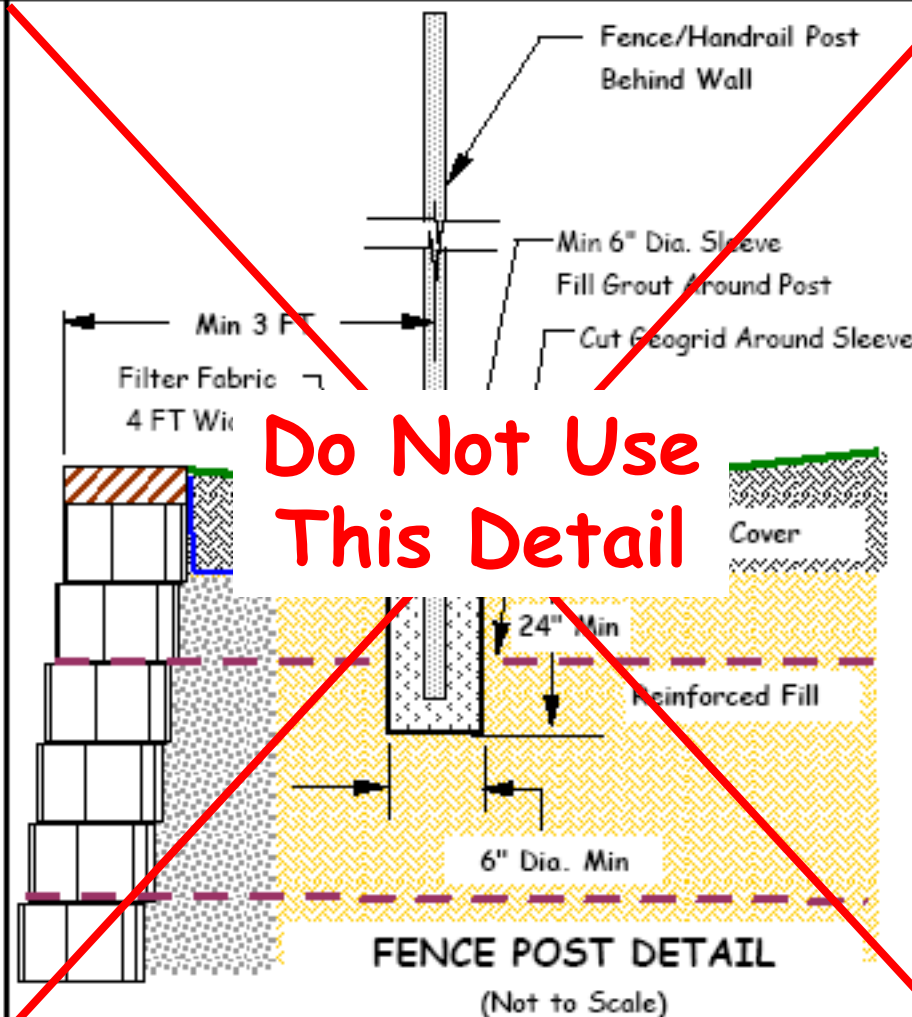
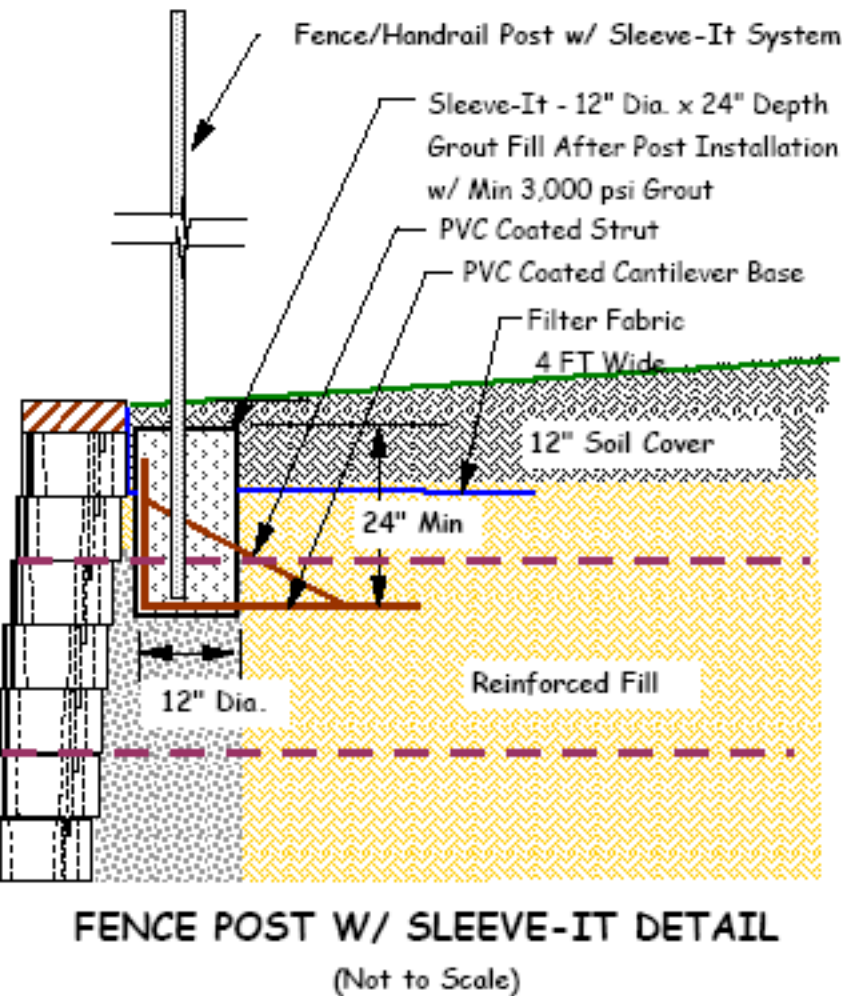
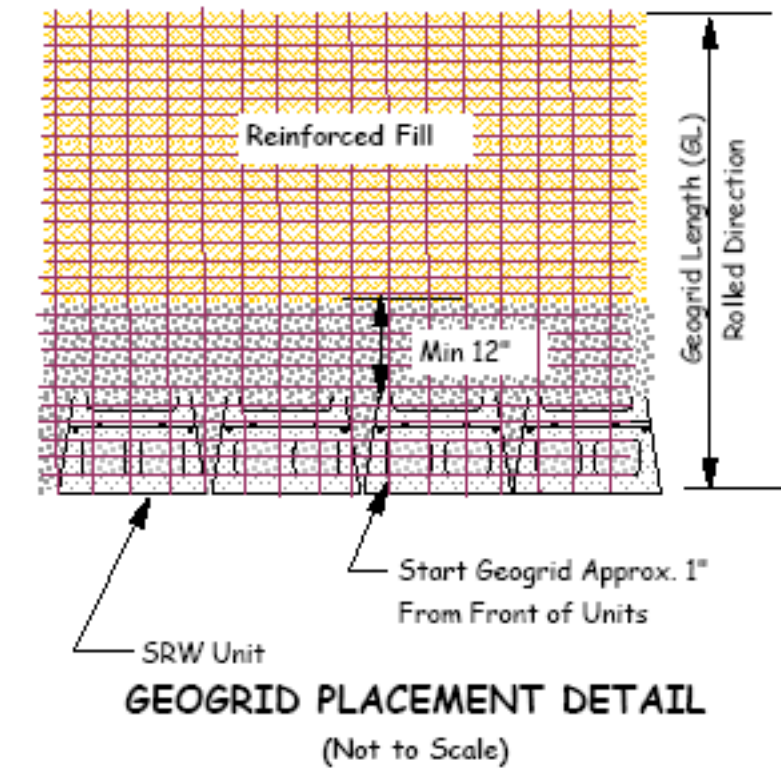
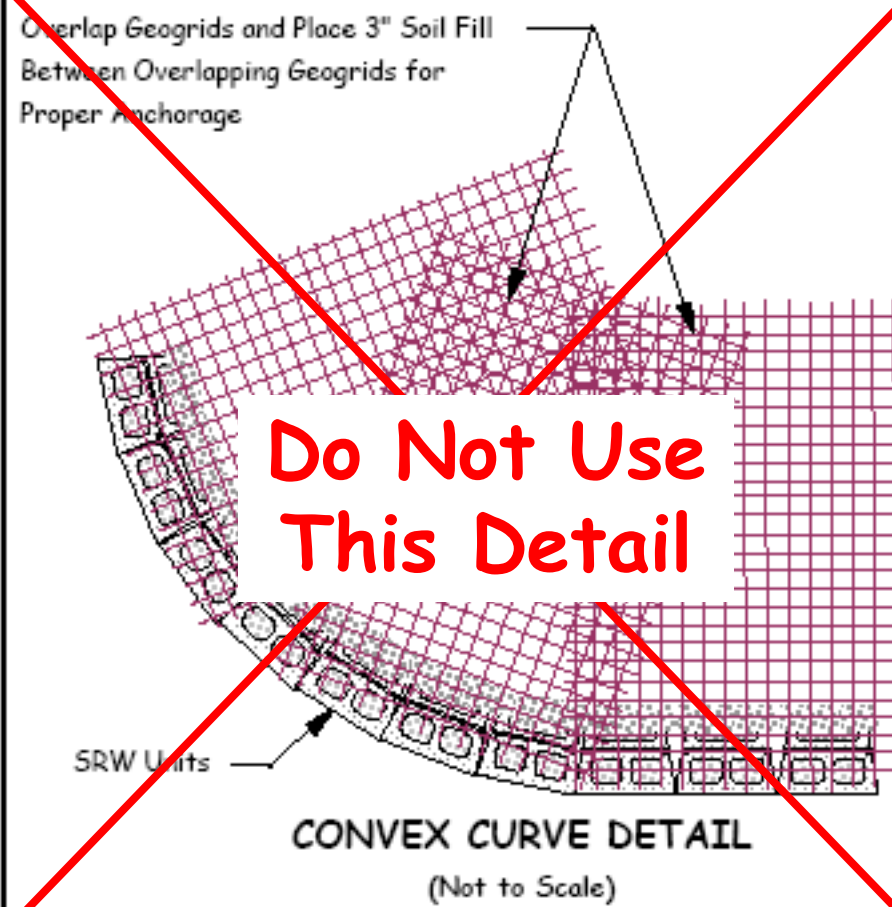
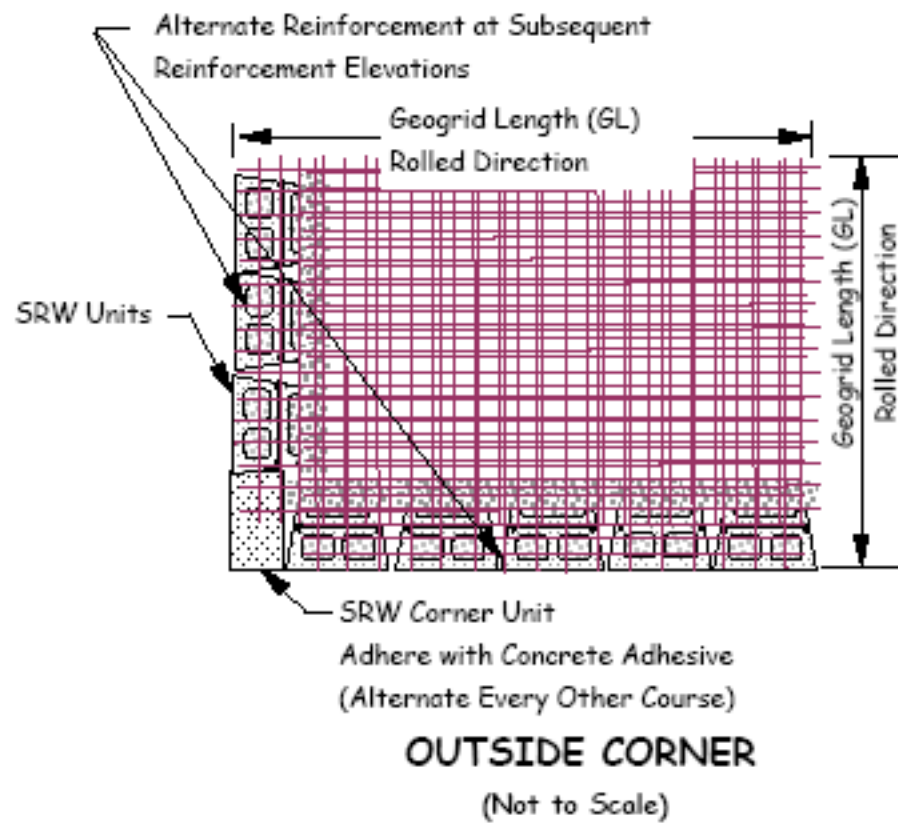
ANY SOFT, SATURATED SOIL ENCOUNTERED IN SUBGRADE SHALL BE UNDERCUT AND REPLACED WITH CRUSHED STONE TO STABILIZE THE FOUNDATION SUBGRADE OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER.

WALL A - MAXIMUM WALL HEIGHT = 9.33 FEET (INCLUDING EMBEDMENT)
FRONT SLOPE = LEVEL
BACKSLOPE BEHIND THE WALL (PARKING LOT) = LEVEL
EQUIVALENT VEHICLE SURCHARGE LOADING AT TOP OF WALL = 100 PSF
DESIGN SOIL BEARING CAPACITY = 1,500 PSF
[SEE NOTE ON WALL PROFILE]

GLOBAL STABILITY (FACTOR OF SAFETY AGAINST SLOPE FAILURE) ≥ 1.50
[BASED ON GSLOPE LIMIT EQUILIBRIUM SLOPE STABILITY ANALYSIS]



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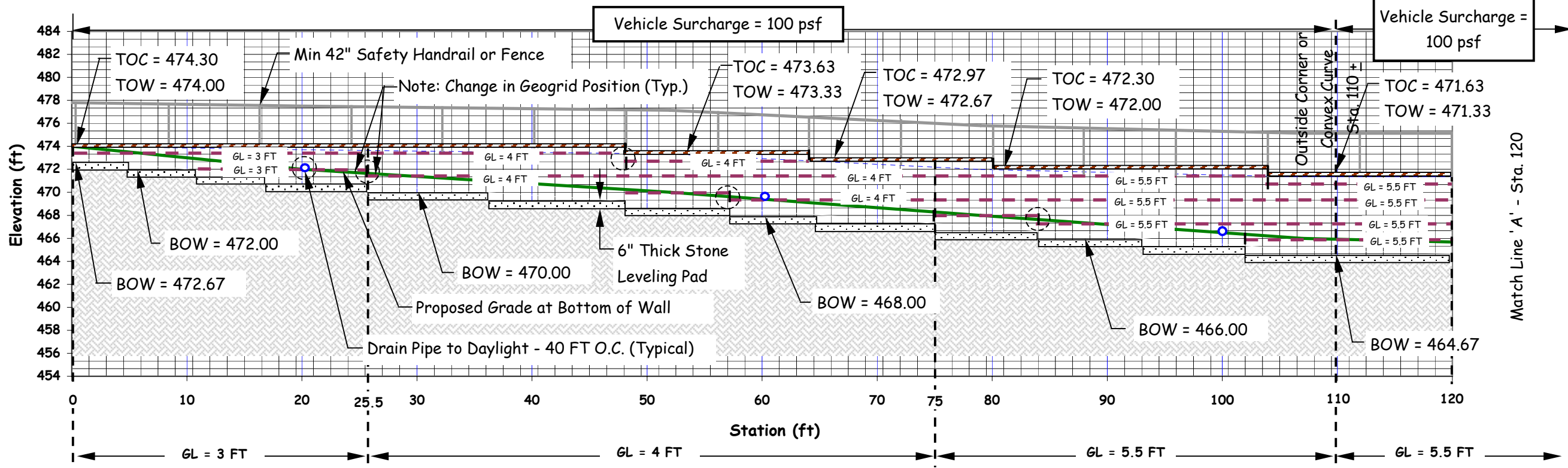
* DETAILS SHOWN FOR SRW UNITS PROVIDED FOR ILLUSTRATIVE PURPOSES.



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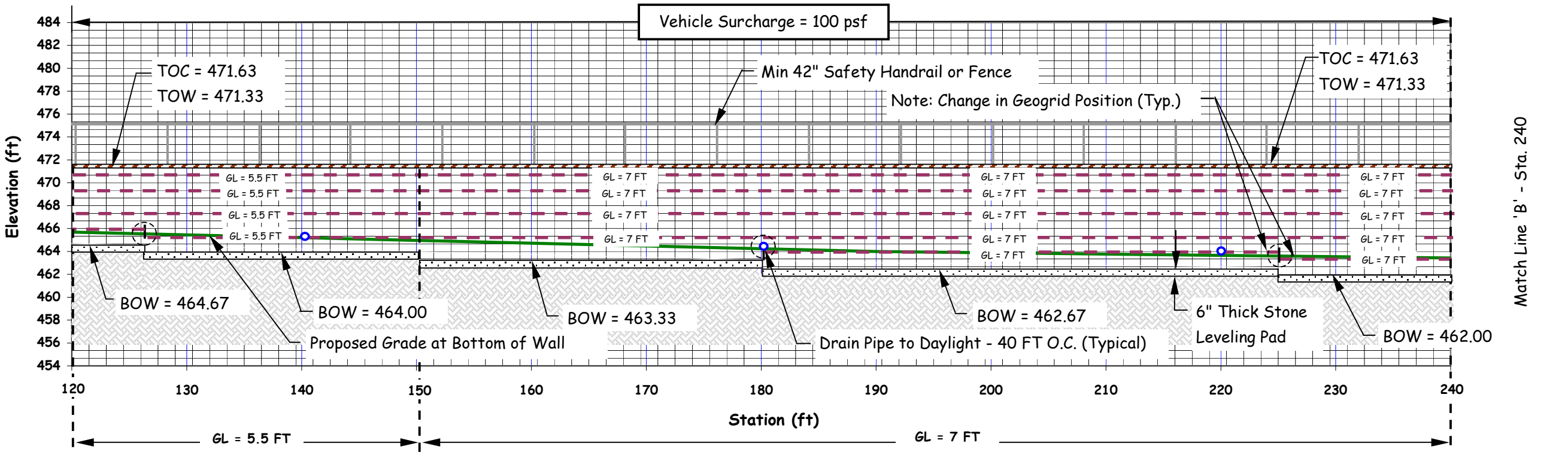
WALL A

Start Wall A - Sta. 0



WALL A

Match Line 'A' - Sta. 120



LEGEND

- Cap Unit (3-5/8" Height)
- SRW Unit (8" Height x 18" Width)
- Leveling Pad (Min. 6" Thick Stone or Min. 3" Lean Concrete)
- TOC Top of Cap Unit
- TOW Top of Wall (Excluding Cap Unit)
- BOW Bottom of Wall (Including Embedment)
- 200 - StrataGrid SG200
- GL Geogrid Length (ft)
- 4" Drain Pipe to Daylight

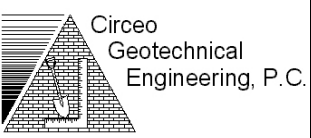
RETAINING WALL A
Sta. 0 to Sta. 240

Viewed From Front Face of Wall

[Design Soil Bearing Pressure = 1,500 psf]



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City of Danville, Virginia



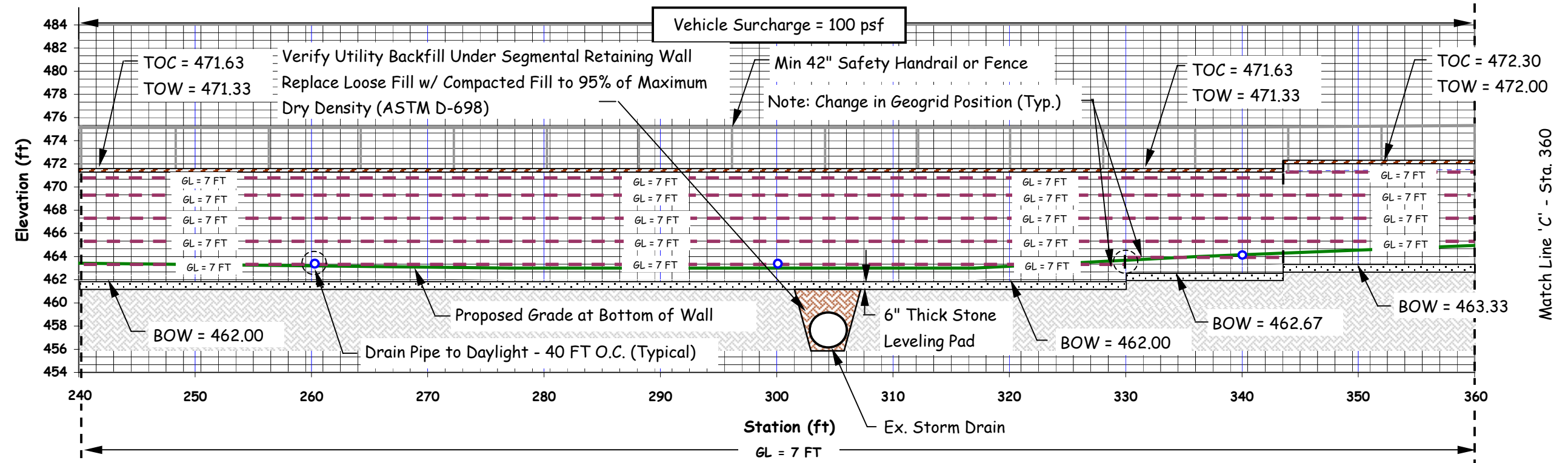
CIRCEO GEOTECH
5956 Buckland Mill Road
Roanoke, Virginia 24019
Phone: (540) 366-2379
Fax: (540) 904-6200

Scale:	H: 1" = 10 ft.
	V: 1" = 10 ft.
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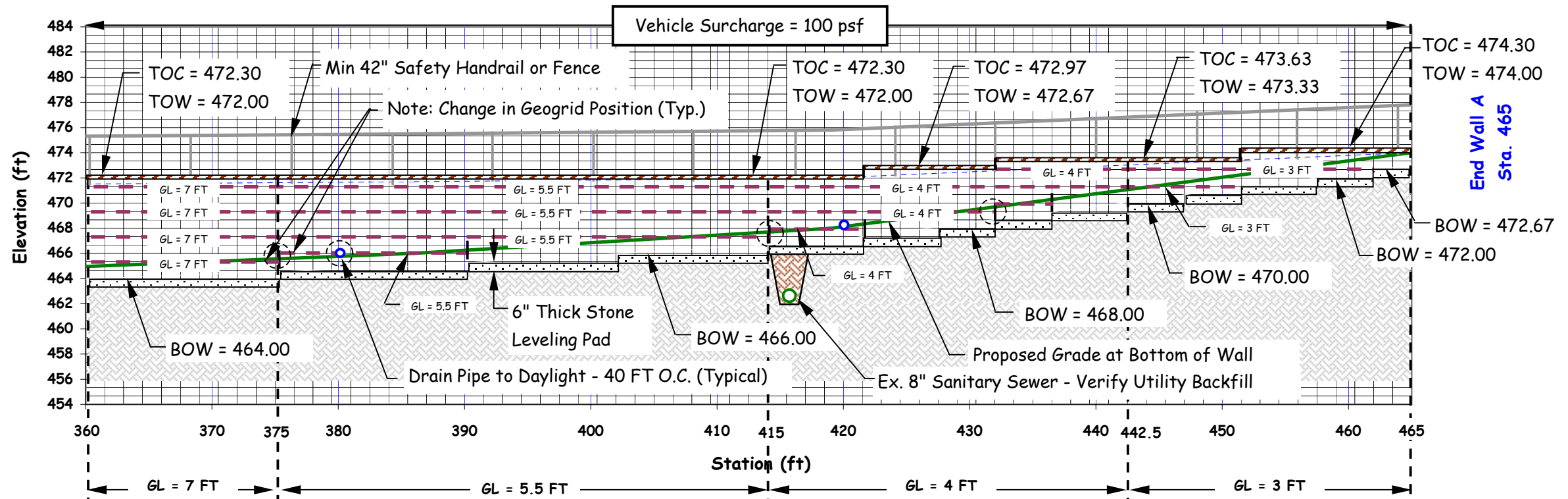
WALL A

Match Line 'B' - Sta. 240



WALL A

Match Line 'C' - Sta. 360



LEGEND

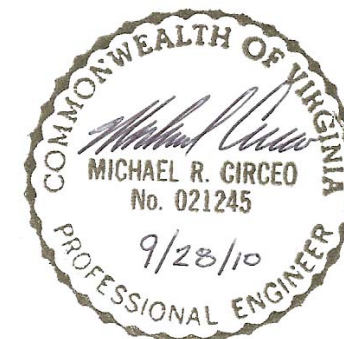
	Cap Unit (3-5/8" Height)
	SRW Unit (8" Height x 18" Width)
	Leveling Pad (Min. 6" Thick Stone or Min. 3" Lean Concrete)
TOC	Top of Cap Unit
TOW	Top of Wall (Excluding Cap Unit)
BOW	Bottom of Wall (Including Embedment)
200 - - -	StrataGrid SG200
GL	Geogrid Length (ft)
	4" Drain Pipe to Daylight

RETAINING WALL A

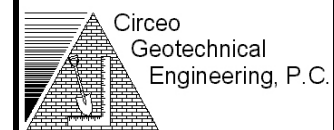
Sta. 240 to Sta. 465

Viewed From Front Face of Wall

[Design Soil Bearing Pressure = 1,500 psf]



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